

# Arizona State Retirement System Board



## Global Tactical Asset Allocation

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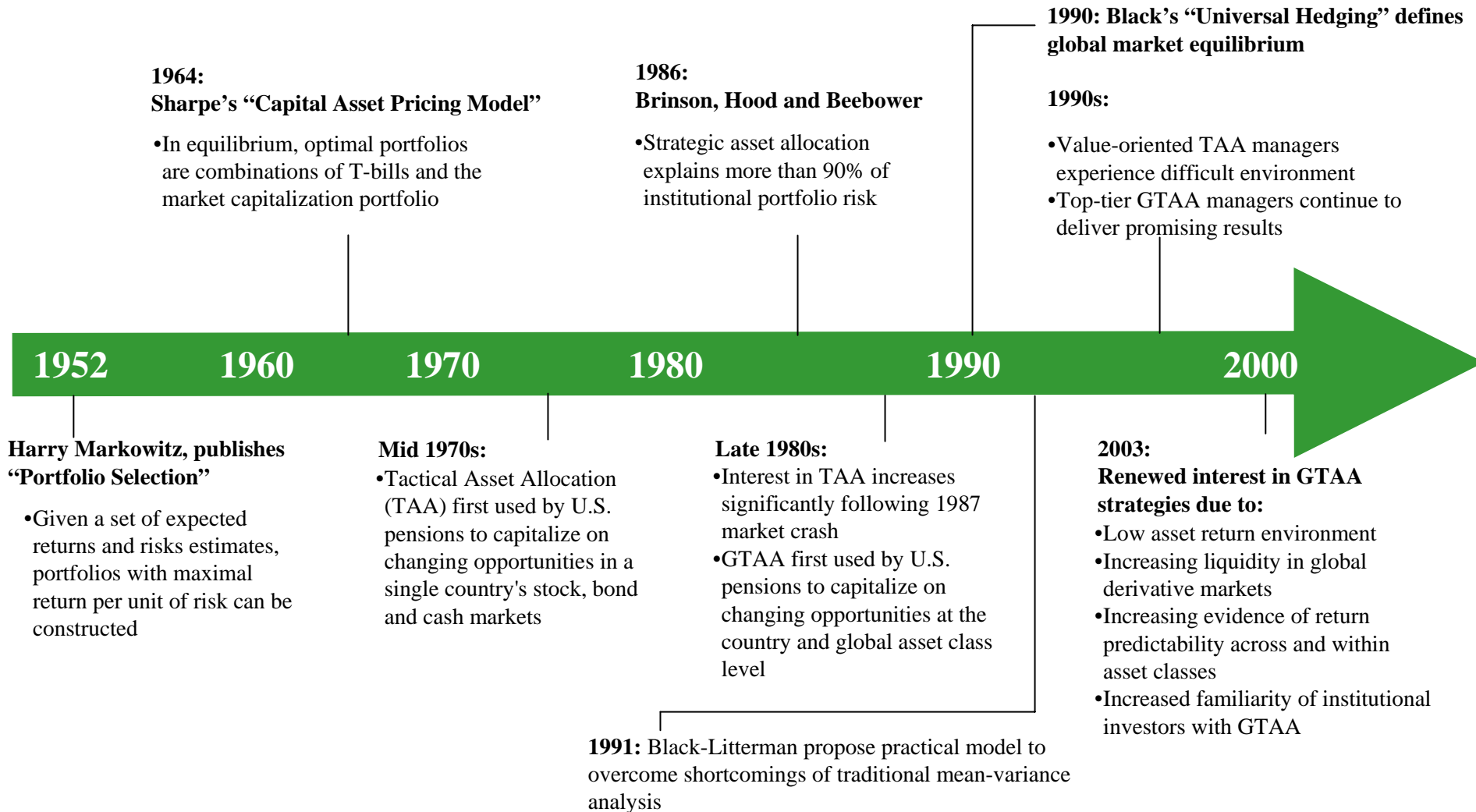
# Agenda

- Asset Allocation Approaches
- History of Asset Allocation
- ASRS Global Tactical Asset Allocation (GTAA)  
Asset Class Overview
- ASRS GTAA Manager Reviews:
  - Bridgewater Associates
  - Goldman Sachs Asset Management
- GTAA Summary

# Asset Allocation Approaches

- Strategic Asset Allocation (SAA)
  - A long-term dedicated investment policy using asset classes and their respective total fund weightings consistent with a prescribed risk/return profile
- Tactical Asset Allocation (TAA)
  - A tactical approach to asset allocation that allows for opportunistic moves between various asset classes in an attempt to provide additional return by taking advantage of changing market conditions

# HISTORY OF ASSET ALLOCATION



# ASRS Global Tactical Asset Allocation

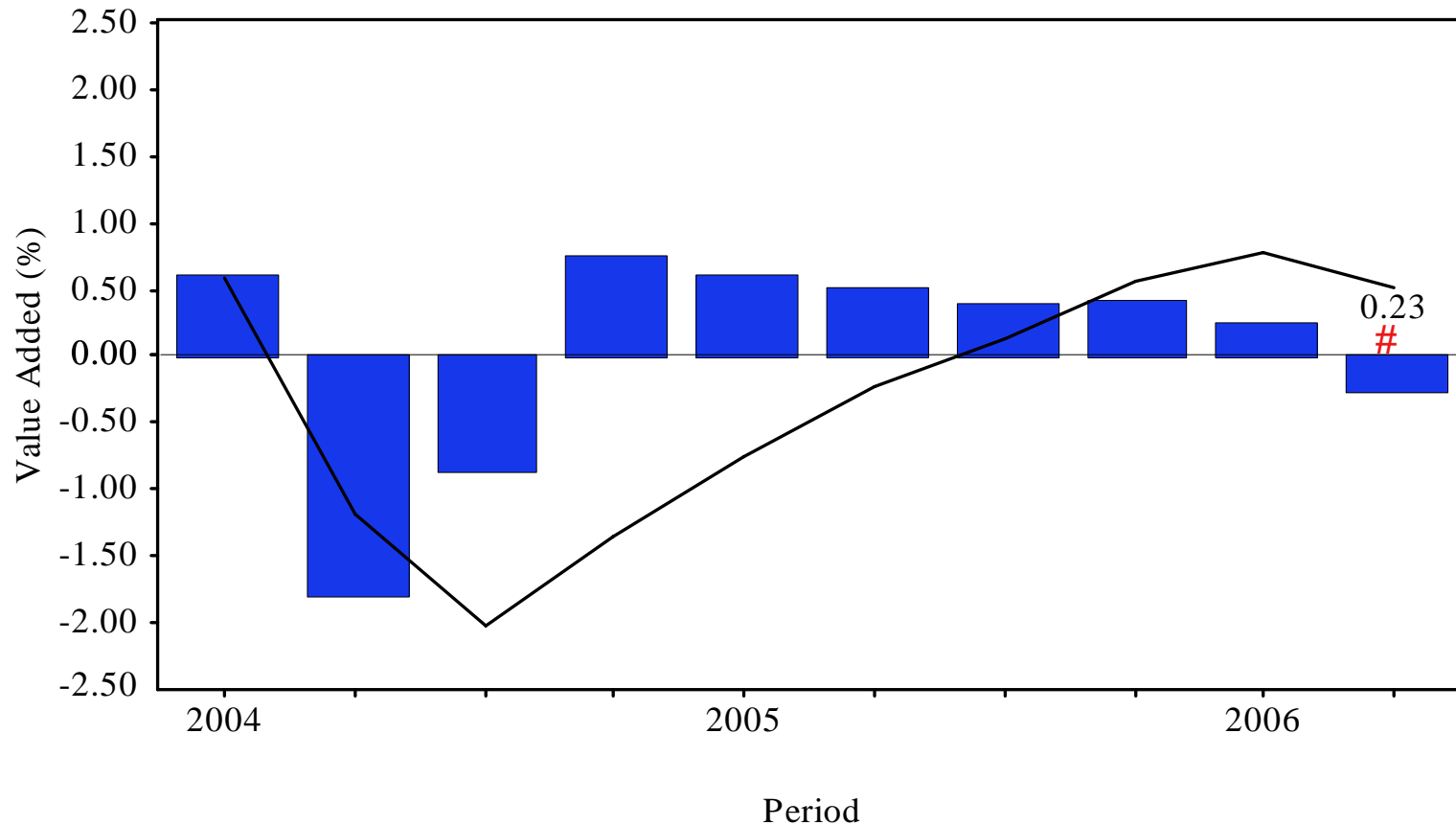
## Asset Class Overview

- Investment Managers:
  - Bridgewater Associates
  - Goldman Sachs Asset Management
- Inception:
  - December 31, 2003
- Benchmark:
  - S&P 56%, MSCI EAFE 16%, Lehman Aggregate 28%
- Target Percent: 10%  $\pm 2\%$
- Asset Class Size:
  - \$2.6 billion, or 10.6% of the Total Fund (as of 9/30/06)

# ASRS GTAA Composite

## Excess Returns

Period ending June 30, 2006



Annualized since 1-2004

Cumulative Value Added

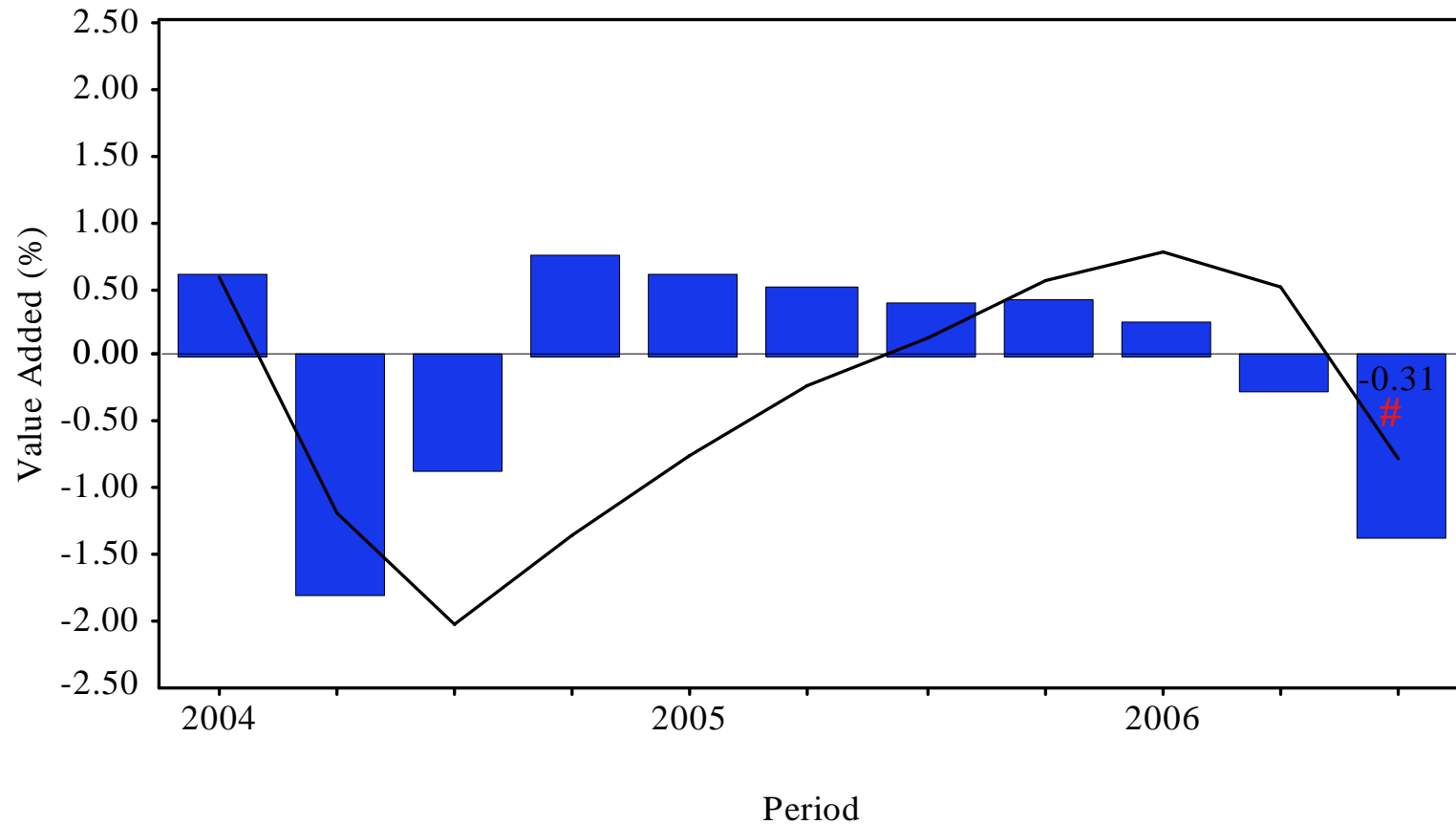
Value Added

Quarterly Data

# ASRS GTAA Composite

## Excess Returns

Period ending September 30, 2006



Annualized since 1-2004



Cumulative Value Added



Value Added

Quarterly Data

Preliminary

# Bridgewater Associates



# Bridgewater Associates

## Background

Location	Westport, Connecticut
Year founded	1975
Type of firm	Independent
Ownership	Employees (100%)
Firm-wide assets	\$168 billion
GTAA strategy assets	\$46 billion
ASRS account to strategy assets	2.9%
Strategy inception date	1989

As of September 30, 2006

# Bridgewater Associates

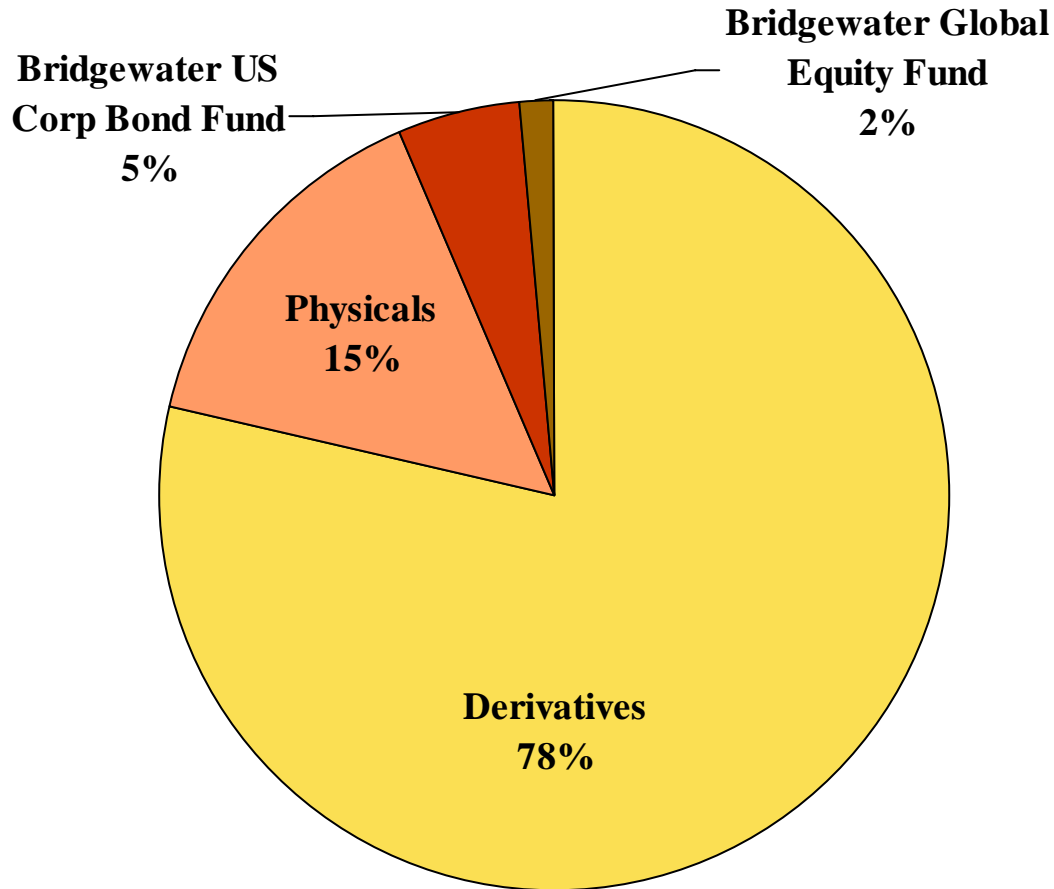
## Portfolio Profile

Portfolio size	\$1,342 million
Management fee	35 bp
Expected excess return	3.00%
Tracking error (active risk)	4.00%
Information ratio	0.8
Portfolio structure	Derivatives (78%), Physicals (22%)
Investment process	Fundamental
<p>Bridgewater believes that a deep understanding of the <u>fundamental determinates</u> of each country's interest rates, exchange rates, and equity markets is an essential prerequisite for adding value in global tactical asset allocation. Bridgewater also believes that a <u>systematic process</u> for quantifying this fundamental relationship and converting it into investment decisions is essential.</p>	

As of September 30, 2006

# Bridgewater Associates

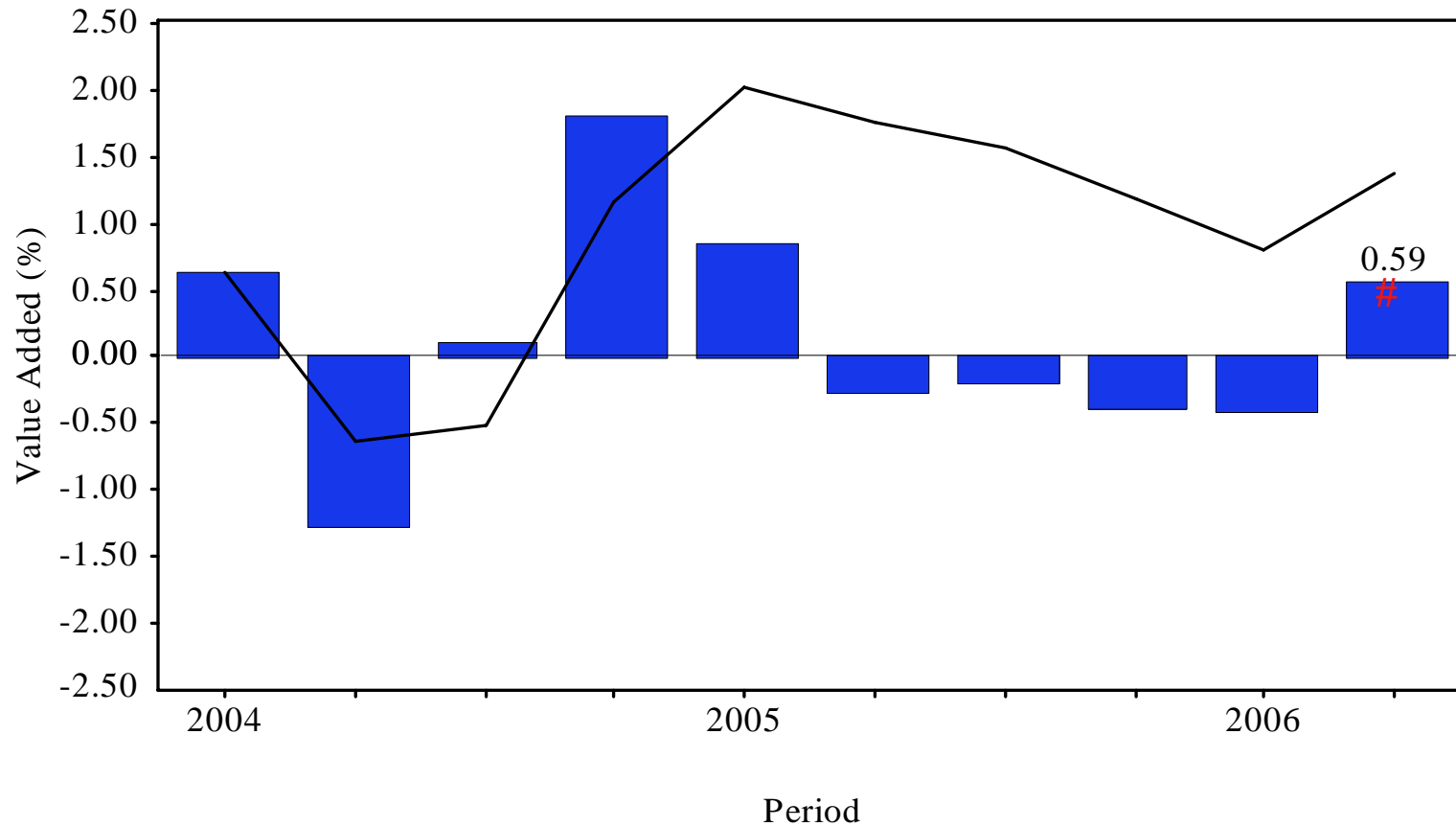
## Portfolio Structure



# Bridgewater Associates

## Excess Returns

Period ending June 30, 2006



Annualized since 1-2004

Cumulative Value Added

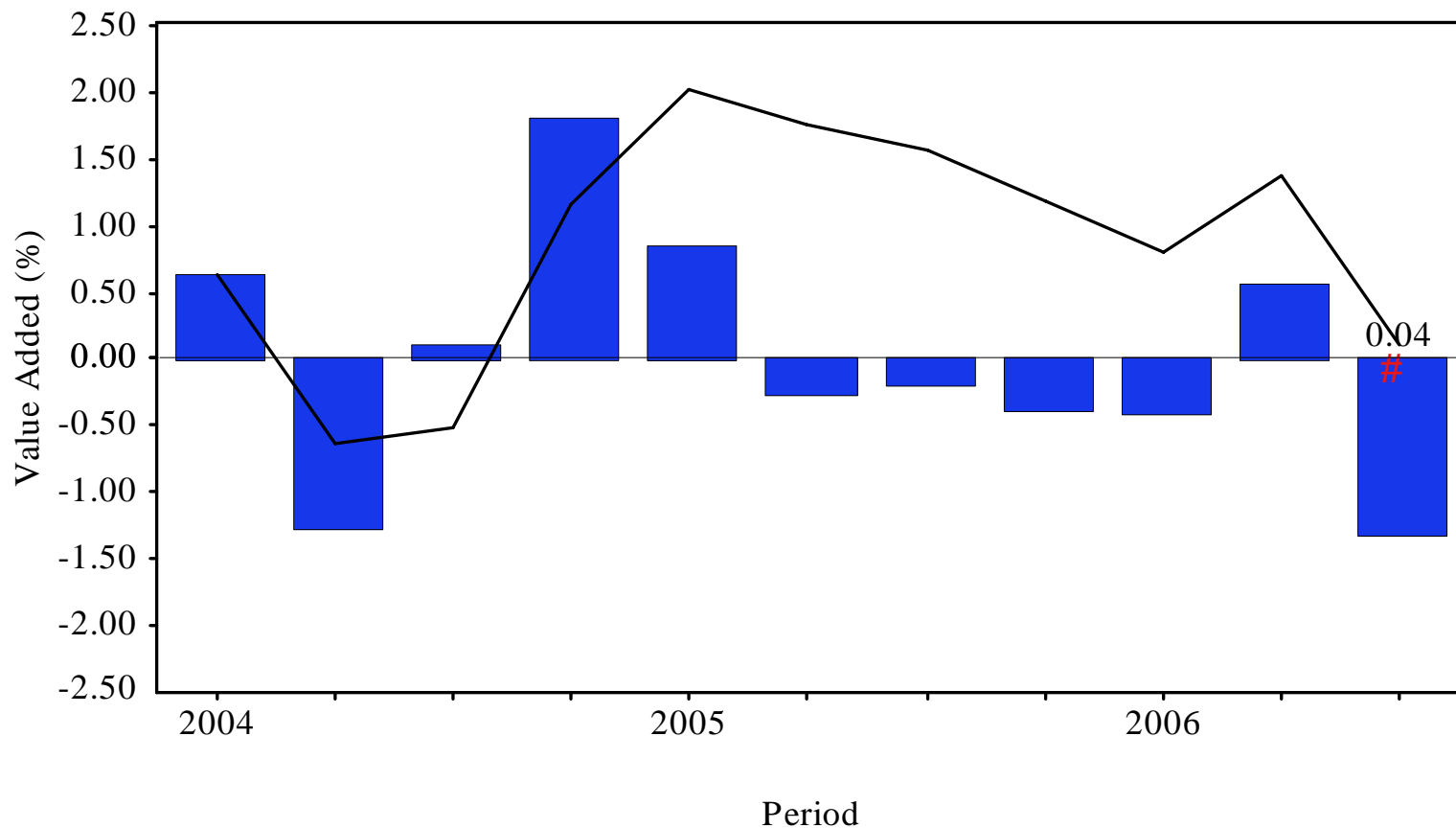
Value Added

Quarterly Data

# Bridgewater Associates

## Excess Returns

Period ending September 30, 2006



Annualized since 1-2004

Cumulative Value Added

Value Added

Quarterly Data

Preliminary

# Bridgewater Associates

## Performance Attribution

- **Biggest Winners**

- Short US and UK bonds relative to European Bonds
  - This position added value over the last year as growth and inflationary pressures at least through the first half of 2006 were stronger in the US and UK and as a result bond yields moved higher in both countries relative to Europe.
- Long Canadian dollar (CAD) and UK Pound (GBP) relative to the US Dollar (USD)
  - CAD/USD position added value due to strong Canadian fundamentals and a better balance of payments positions.
  - GBP/USD position benefited as the UK attracted capital inflows, mostly from other central banks diversifying out of USD reserve holdings.
- Long Australian Equities
  - Australian equities appreciated due to strong growth and stable interest rates.

- **Biggest Losers**

- Japanese Yen (JPY) relative to the Euro and USD
  - This position detracted due to 1) higher growth and interest rates in Europe relative to Japan and lately the US, 2) disproportionate impact on the JPY from record oil prices, 3) impact of Chinese intervention in foreign exchange markets, 4) some evidence that central bank reserve diversification out of the dollar is helping the Euro more than the JPY.
- Short US Bonds
  - The US Fed stopped raising short-term interest rates and there was conclusive evidence that housing prices were falling. Investors covered short positions and bonds rallied.

# Bridgewater Associates

## Current Investment Views

- **Global Economic Themes**

- Easy monetary policy in the aftermath of the deflating equity bubble and the terror attacks sparked a global growth boom.
- Monetary policy is tightening globally but global interest (particularly U.S.) rates continue to be too low to moderate increasing growth and inflation conditions.
- Housing weakness in the U.S. is being overblown as business investment recovers sharply.
- Emerging market wealth shift (with China at epicenter) produces secular deflationary pressures but these no longer fully counterbalance cyclical pressures.
- The depression in Japan is over while growth in Europe is picking up, exacerbating global cyclical pressures.

# Bridgewater Associates

## Current Investment Views

- **Global Fixed Income**

- Bridgewater (BW) was short world bonds throughout the quarter, but have cut back position. BW has gone from neutral to being modestly long global short interest rates.
- BW has become increasingly short Euroland bonds and short interest rates on a relative basis. BW has a significant long Japanese bond position on a relative basis.

- **Currencies**

- BW remains long the Japanese Yen against most currencies and short both the Euro and the US Dollar against most developed currencies.

- **Global Equity**

- BW is slightly short most global equity markets with the biggest shorts in Euroland. BW remains slightly long Australia and the UK.



# Bridgewater Associates

## Portfolio Positions

Strategy	Deviation from Benchmark (%)
<b>Equity Country Selection:</b>	
Others (23)	-0.6
Total	<b>-0.6</b>
<b>Long-term Fixed Income Country Selection:</b>	
Japan	18.0
United Kingdom	-6.0
United States	-17.0
Euroland	-20.6
Others (2)	-2.7
Total	<b>-28.3</b>
<b>Short-term Fixed Income Country Selection:</b>	
United States	11.2
United Kingdom	8.1
Others (4)	7.1
Total	<b>26.4</b>
<b>Currency Selection:</b>	
Japanese Yen	14.2
UK Pound Sterling	9.5
Canadian Dollar	7.0
Swiss Franc	4.9
Euro	-12.6
Others (7)	2.7
Total	<b>25.7</b>

# Bridgewater Associates Portfolio Rebalancing<sup>1</sup>

Policy Relative			
Type of Exposure (USD)	Policy Limit	5/31/06	9/30/06
<b>Equity Limits</b>			
International Equity	0% - 50%	16.36	15.23
U.S. Equity	0% - 70%	<u>53.59</u>	<u>57.71</u>
Total Equities	0% - 100%	69.95	72.94
<b>Fixed Income Limits</b>			
Total non-U.S. Developed Mkts			
Previous	0% - 50%	24.07	NA
Current	-30% - 30%	NA	5.07
U.S. Fixed Income	0% - 60%	<u>1.65</u>	<u>21.73</u>
Total Fixed Income	0% - 60%	25.72	26.80
<b>Fixed Income Limits (Duration)</b>			
Total Non-US Fixed Income	-3 to 3 yrs.	NA	0.15
US Fixed Income	0 to 6.3 yrs.	NA	1.14
Total Fixed Income	0 to 6.3 yrs.	NA	1.28
<b>Invested Limit</b>			
Previous	90% - 100%	95.67	NA
Current	70% - 130%	NA	99.74
<b>Currency Limits</b>			
Total non-U.S. (developed)	0% - 50%	26.18	39.96
U.S. Dollar	50% - 100%	73.82	60.04
Benchmark Relative			
Type of Exposure (USD)	Policy Target	5/31/06	9/30/06
US Equity	56	-2.41	1.71
International Equity	<u>16</u>	<u>0.36</u>	<u>-0.77</u>
Total Equity	72	-2.05	0.94
US Fixed Income	28	-26.35	-6.27
International Fixed Income	<u>0</u>	<u>24.07</u>	<u>5.07</u>
Total Fixed Income	28	-2.28	-1.20
Leverage Drift	0	4.33	0.26
Foreign Currency Exposure	16	10.18	23.96
USD Position		Short	Short

<sup>1</sup> GTAA constraints modified on June 30, 2006

# Goldman Sachs Asset Management

# Goldman Sachs Asset Management Background

Location	New York, New York
Year founded	1988
Type of firm	Financial Conglomerate
Ownership	Goldman Sachs Company (51%) Public (49%)
Firm-wide assets	\$549 billion
GTAA strategy assets	\$106 billion
ASRS account to strategy assets	1.2%
Strategy inception date	1996

As of September 30, 2006

# Goldman Sachs Asset Management

## Portfolio Profile

Portfolio size	\$1,314 million
Management fee	35 bp
Expected excess return	1.80%
Tracking error (active risk)	2.25%
Information ratio	0.8
Portfolio structure	Derivatives (6%), Physicals (94%)
Investment process	Quantitative

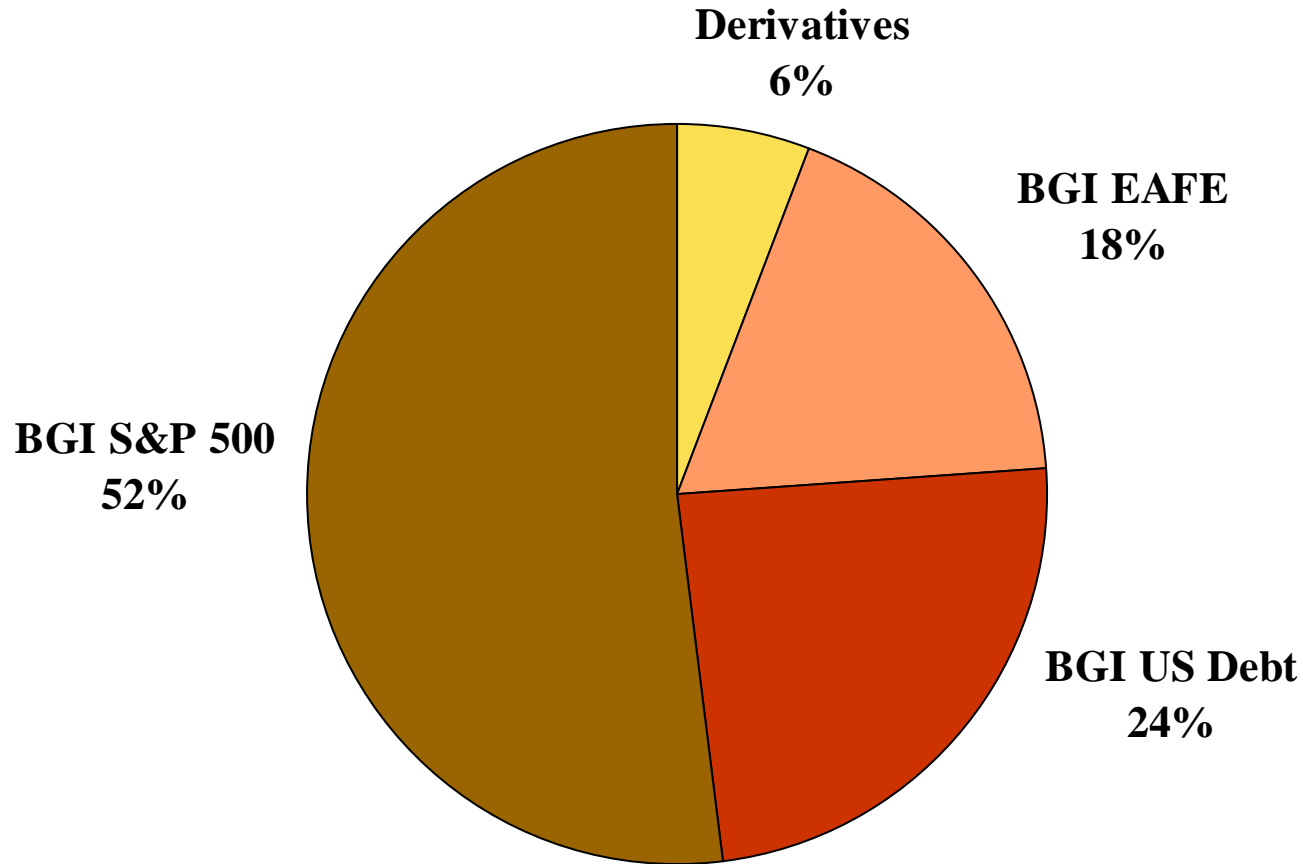
GSAM's Global Tactical Asset Allocation philosophy is based on a set of core beliefs:

1. Global securities markets exhibit predictable patterns. GSAM believes that markets are not perfectly efficient: valuations may drift away from fair value, investors may be slow to incorporate new information, structural barriers exist, risk premia change over time and some participants are not motivated solely by profit. GTAA is a disciplined quantitative approach designed to exploit changing market conditions and capture relative value across countries and asset classes.

2. The broader the opportunity set across markets and investment themes, the more value a skilled manager may add. In reducing risk and maximizing potential sources of returns, diversification within each GTAA strategy, or the allocation of risk across investment themes (valuation, momentum, fund flows, risk premia, macro), is just as important as diversification across asset classes and markets. No one theme or forecast variable drives the investment process.

3. Models should be transparent and based on sound economic principles.

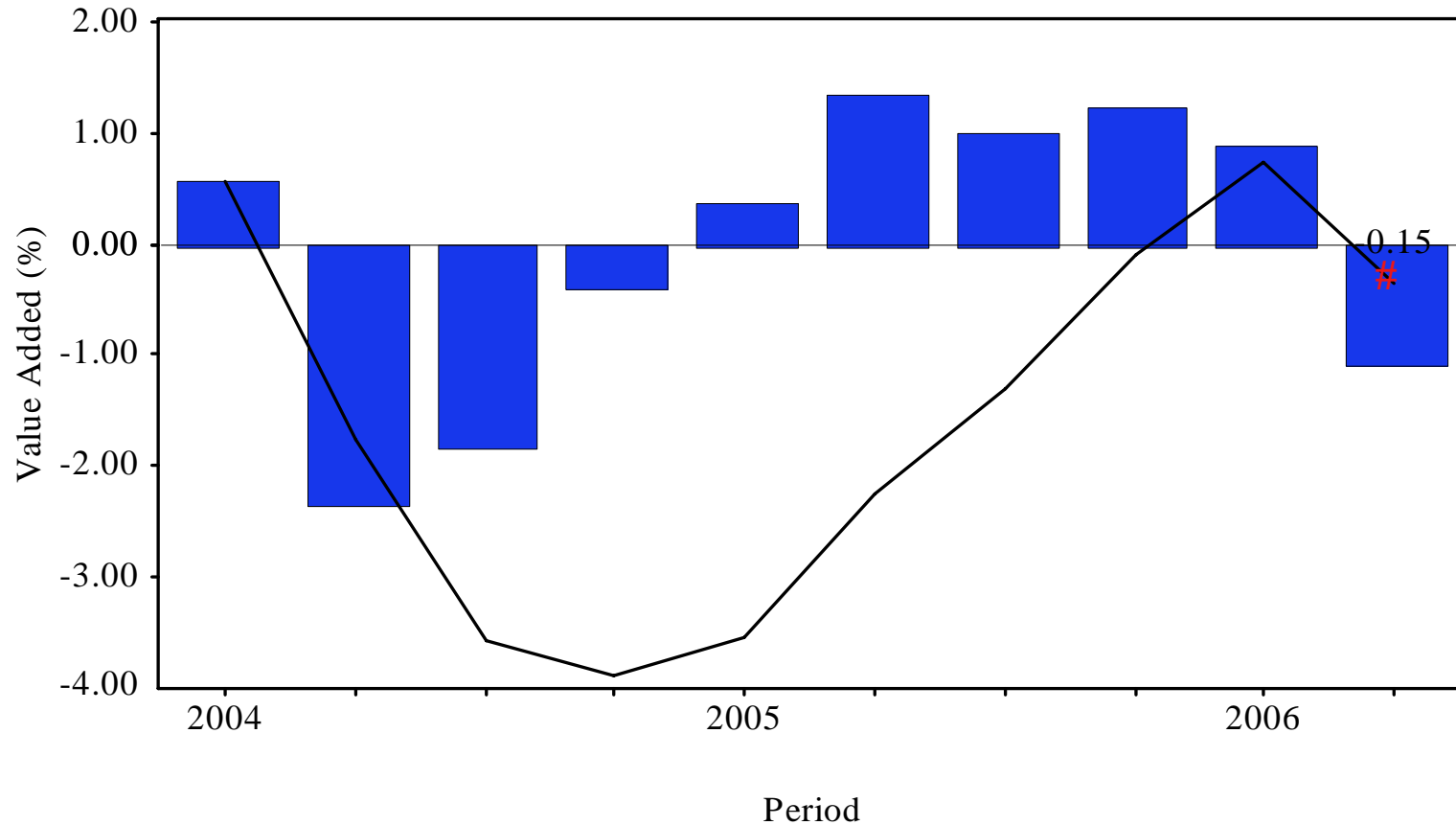
# Goldman Sachs Asset Management Portfolio Structure



# Goldman Sachs Asset Management

## Excess Returns

Period ending June 30, 2006



Annualized since 1-2004

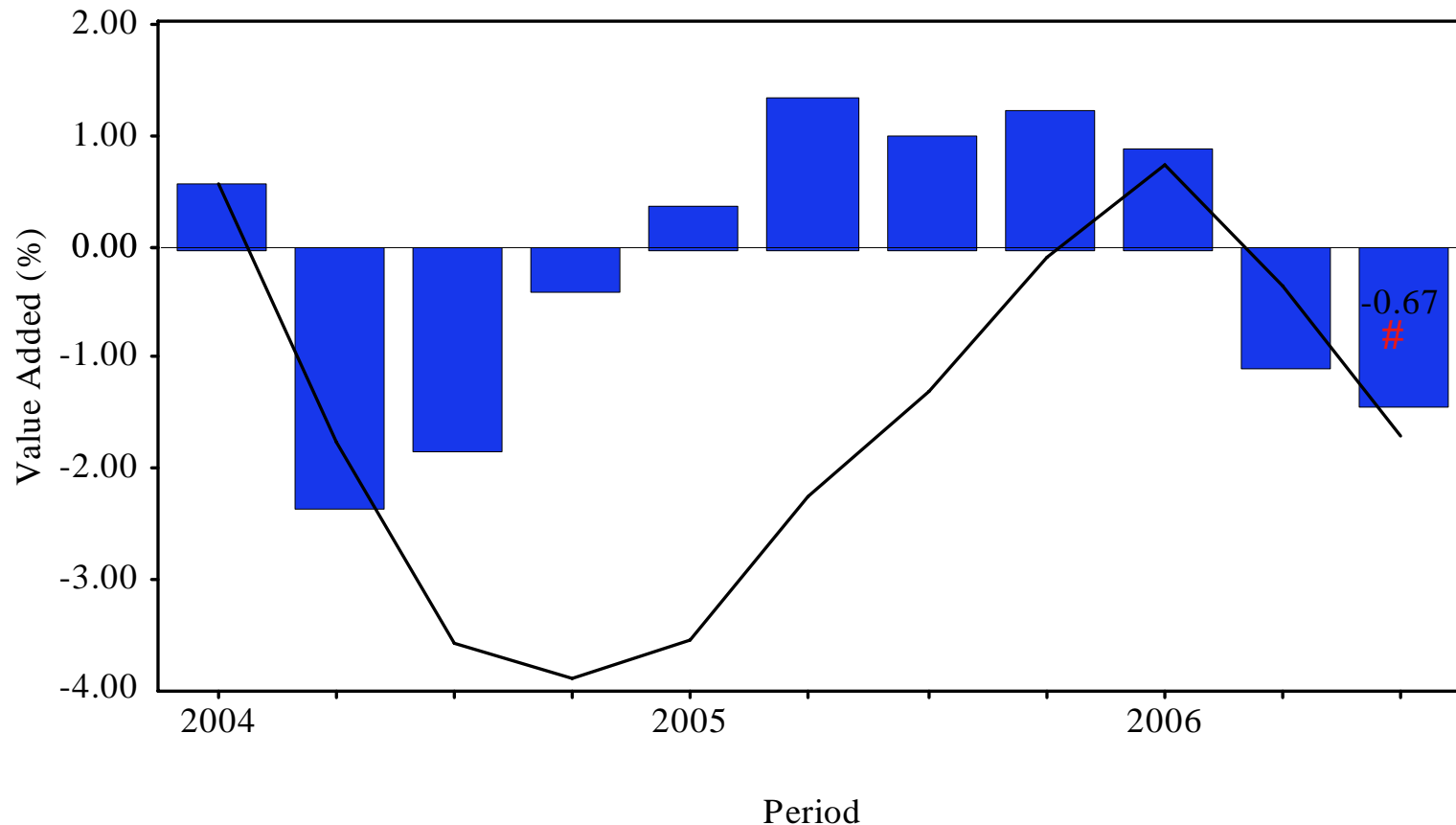
Cumulative Value Added

Value Added

# Goldman Sachs Asset Management

## Excess Returns

Period ending September 30, 2006



Annualized since 1-2004

Cumulative Value Added

Value Added

Quarterly Data

Preliminary



# Goldman Sachs Asset Management

## Performance Attribution

- **Equity Country Selection**
  - Contributed approximately 60 basis points since inception. 2005 was a strong year primarily due to overweight positions in Europe and in the Japanese equity market.
- **Fixed Income Country Selection**
  - Detracted approximately 65 basis points since inception. The bulk of this underperformance occurred in 2006 as a short position in Japanese bonds suffered from falling yields.
- **Currencies**
  - Detracted approximately 215 basis points since inception, driven in large part by poor performance in 2004. In particular, a short position in the Canadian dollar and a long position in the Japanese Yen both contributed to underperformance.
- **Asset Class Timing**
  - Contributed approximately 135 basis points since inception. Equity timing and fixed income timing have performed strongly, most notably underweight fixed income position in 2006.
- **Sector Timing**
  - Added approximately 30 basis points since inception. Strong performance in 2006 was bolstered by an overweight to large-cap stocks relative to small-cap stocks.

# Goldman Sachs

## Current Investment Views

- **Equity Country Selection**
  - Overweight Netherlands and Japan due to favorable long-term valuation and short-term momentum.
  - Underweight Australia due to unfavorable long-term valuation, short-term momentum, and macroeconomics.
  - Underweight United States due to unfavorable long-term valuation and short-term momentum.
- **Fixed Income Country Selection**
  - Overweight Euroland and United Kingdom due to favorable risk premia and macroeconomics.
  - Underweight Japan and United States due to unfavorable long-term valuation and macroeconomics.
- **Currency Selection**
  - Overweight United Kingdom due to favorable short-term momentum and fund flows.
  - Overweight Norway due to fund flows and macroeconomics.
  - Underweight Japan due to unfavorable short-term momentum, fund flows, and macroeconomics.
  - Underweight New Zealand due to unfavorable long-term valuation.
- **Asset Class Timing and Sector Timing**
  - Strong underweight global fixed income as a result of unfavorable valuations.
  - Neutral on global equity as a result of favorable conditions being offset by unfavorable growth prospects.
  - Strongly underweight small-cap stocks versus large-cap stocks as a result of unfavorable risk premiums, unsupportive macroeconomic conditions, and unattractive valuations.
  - Modestly underweight technology stocks versus blue-chip stocks as a result of unfavorable valuations, weak momentum, and unfavorable risk premiums.

# Goldman Sachs Asset Management

## Portfolio Positions

Strategy	Deviation from Benchmark (%)
<b>Equity Country Selection:</b>	
Netherlands	4.4
Japan	4.3
United States	-4.2
Australia	-4.3
Others (19)	-4.7
Total	<b>-4.5</b>
<b>Fixed Income Country Selection:</b>	
Euroland	28.8
United Kingdom	8.1
United States	-22.9
Japan	-31.9
Others (2)	5.7
Total	<b>-12.2</b>
<b>Currency Selection:</b>	
UK Pound Sterling	14.6
Norweigan Krona	4.3
New Zealand Dollar	-9.5
Japanese Yen	-14.8
Others (8)	0.6
Total	<b>-4.8</b>
<b>Asset Class Timing:</b>	
Global Bonds	-20.1

# Goldman Sachs

## Asset Management

### Portfolio Rebalancing<sup>1</sup>

Policy Relative			
Type of Exposure (USD)	Policy Limit	5/31/06	8/31/06
<b>Equity Limits</b>			
International Equity	0% - 50%	19.87	15.57
U.S. Equity	0% - 70%	<u>50.46</u>	<u>54.41</u>
Total Equities	0% - 100%	70.33	69.98
<b>Fixed Income Limits</b>			
Total non-U.S. Developed Mkts			
Previous	0% - 50%	4.20	NA
Current	-30% - 30%	NA	-3.32
U.S. Fixed Income	0% - 60%	<u>15.49</u>	<u>5.74</u>
Total Fixed Income	0% - 60%	19.69	2.42
<b>Fixed Income Limits (Duration)</b>			
Total Non-US Fixed Income	-3 to 3 yrs.	NA	-0.01
US Fixed Income	0 to 6.3 yrs.	NA	0.02
Total Fixed Income	0 to 6.3 yrs.	NA	0.01
<b>Invested Limit</b>			
Previous	90% - 100%	90.02	NA
Current	70% - 130%	NA	72.40
<b>Currency Limits</b>			
Total non-U.S. (developed)	0% - 50%	10.86	11.23
U.S. Dollar	50% - 100%	89.14	88.77
Benchmark Relative			
Type of Exposure (USD)	Policy Target	5/31/06	9/30/06
US Equity	56	-5.54	-1.59
International Equity	<u>16</u>	<u>3.87</u>	<u>-0.43</u>
Total Equity	72	-1.67	-2.02
US Fixed Income	28	-12.51	-22.26
International Fixed Income	<u>0</u>	<u>4.20</u>	<u>-3.32</u>
Total Fixed Income	28	-8.31	-25.58
Leverage Drift	0	9.98	27.60
Foreign Currency Exposure	16	-5.14	-4.77
USD Position		Long	Long

<sup>1</sup> GTAA constraints modified on June 28, 2006

# GTAA Summary

# GTAA Portfolio Statistics

## Historical Analysis

Period ending September 30, 2006<sup>1</sup>

	<b>Bridgewater Associates</b>	<b>Goldman Sachs</b>	<b>GTAA Composite</b>
Alpha $\alpha$	0.04%	-0.67%	-0.31%
Tracking Error $\sigma$	1.67%	1.95%	1.33%
Information Ratio	0.02	-0.35	-0.23
Beta $\beta$	1.0	1.0	1.0
R <sup>2</sup>	0.91	0.88	0.94
Correlation $\rho$ (alpha)	0.07		---

- The tracking error or active risk for each manager is modest and slightly less than their respective risk budgets.
- The returns of the individual portfolios and the composite are highly sensitive to changes in the market return (i.e. benchmark).
  - The high R-Squared indicates that a significant percentage of the variance of the returns can be explained by market movements.
  - The portfolio volatilities are comparable to the market, as indicated by betas of 1.0.
- The correlation coefficient is close to 0 and indicates that there is essentially no relationship between the movements of the excess returns or alphas of the individual portfolios. It is desirable to combine managers with alpha return series that have low or zero correlations to enhance diversification.

<sup>1</sup> Historical analysis covers the entire returns series for the GTAA asset class, which started on January 2, 2004 and covers 11 quarters.

# GTAA Summary

- Despite recent poor performance, both GTAA managers are expected to outperform over the long-term for the following reasons:
  - Stable organizational structure
  - Prudent asset growth strategies
  - Top-quality investment professionals in portfolio management and research
  - Ongoing commitment to research and model enhancement
  - Consistently applied investment process
  - Mercer highly rates both GTAA manager products at A
- The GTAA program is approaching the 3-year anniversary, as such IMD will:
  - Continue to closely monitor both managers given performance is below expectations and constraints have recently been relaxed
  - Consider potential modifications to the program
  - Evaluate other GTAA managers